

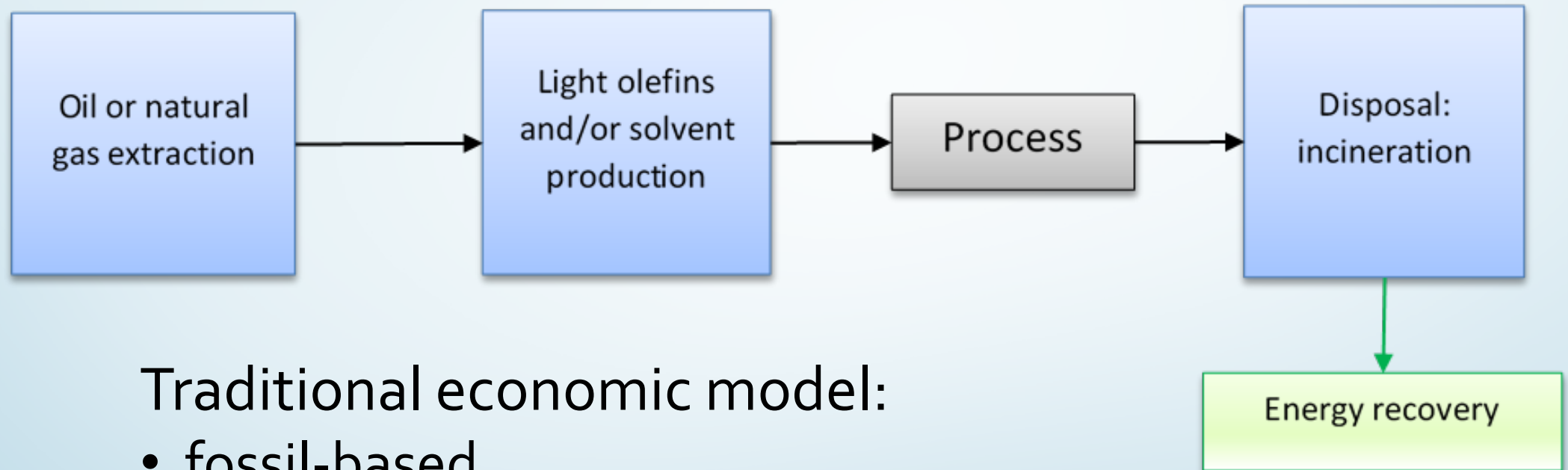


# SOLVENT CYCLIZATION

*Cyclization of the solvent life in  
pharmaceutical industry*

by Emanuele Marcone

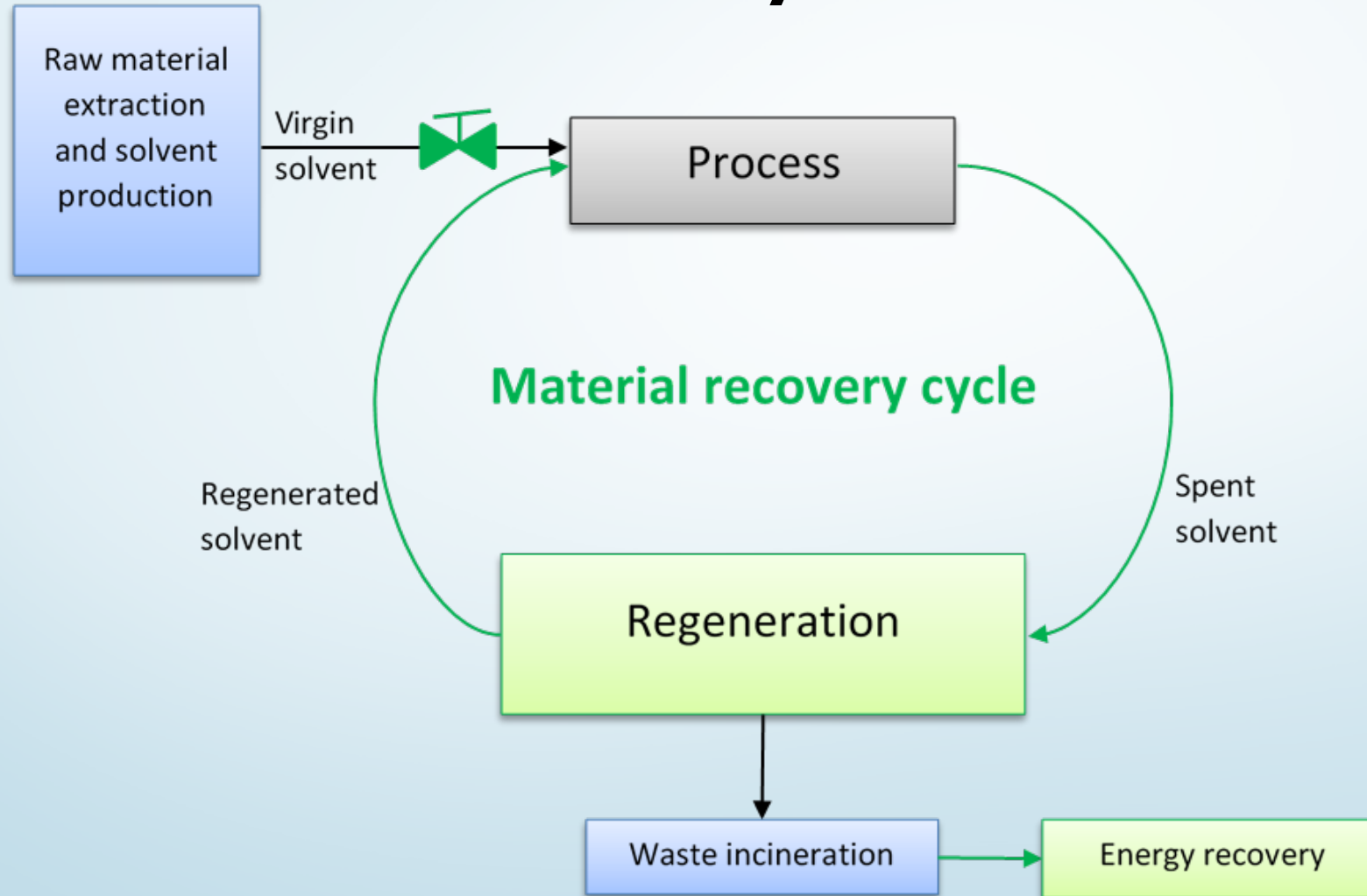
# Life of a solvent



Traditional economic model:

- fossil-based
- linear
- **not environmentally sustainable**

# Solvent cyclization

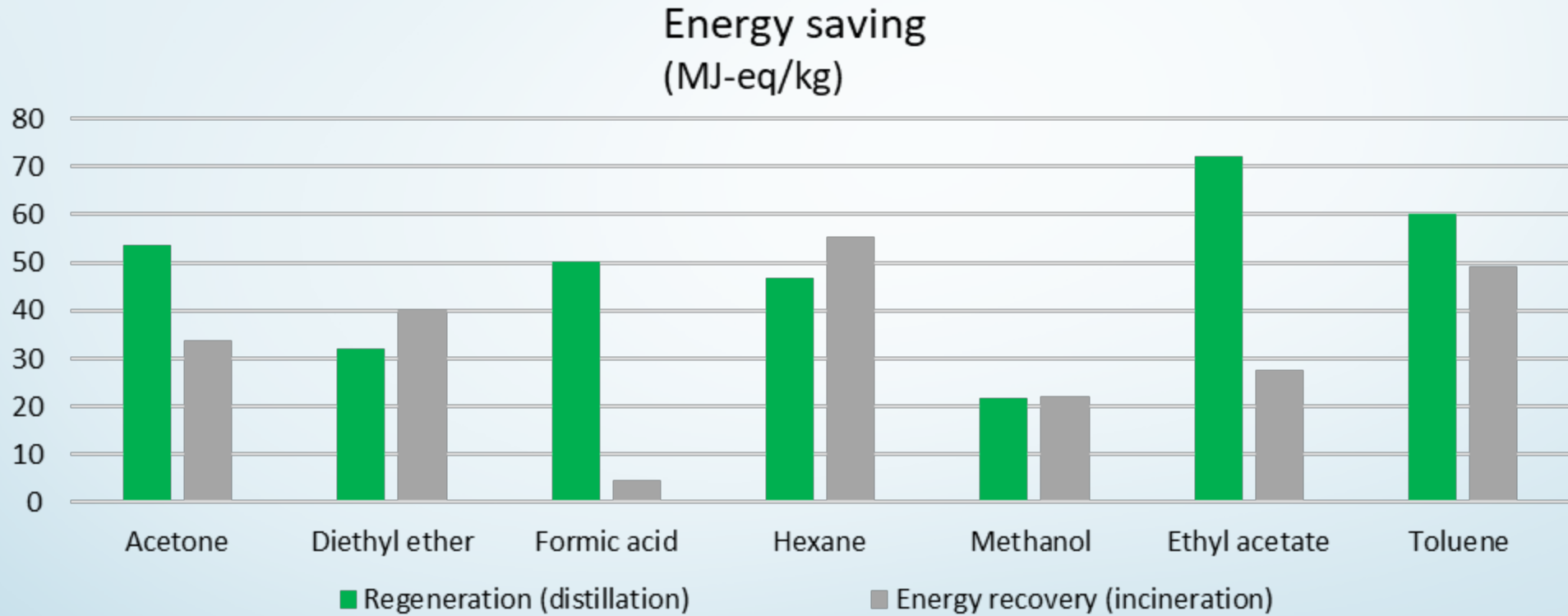


# Solvent cyclization

## Advantages:

- 75-90% material recovery → less natural resources consumption
- Reduced energy consumption

# Solvent cyclization



# Methanol recovery project

*In collaboration with Corden Pharma Bergamo S.p.A.*

## Spent solvent composition:

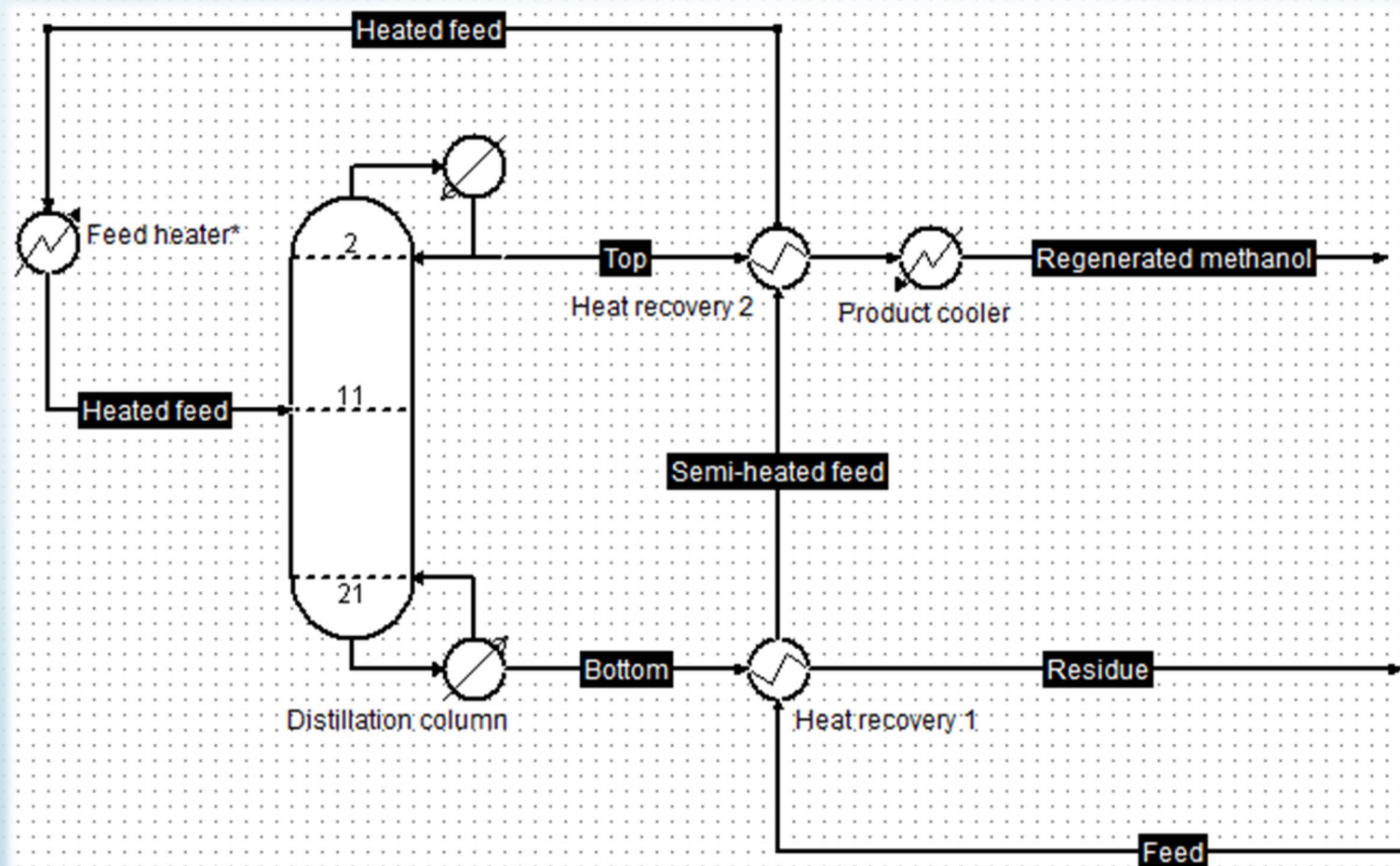
- 94% methanol
- 3% water
- 

## Recovered solvent characteristics:

- >99% methanol
- No relevant impurities

# Methanol recovery project

*In collaboration with Corden Pharma Bergamo S.p.A.*



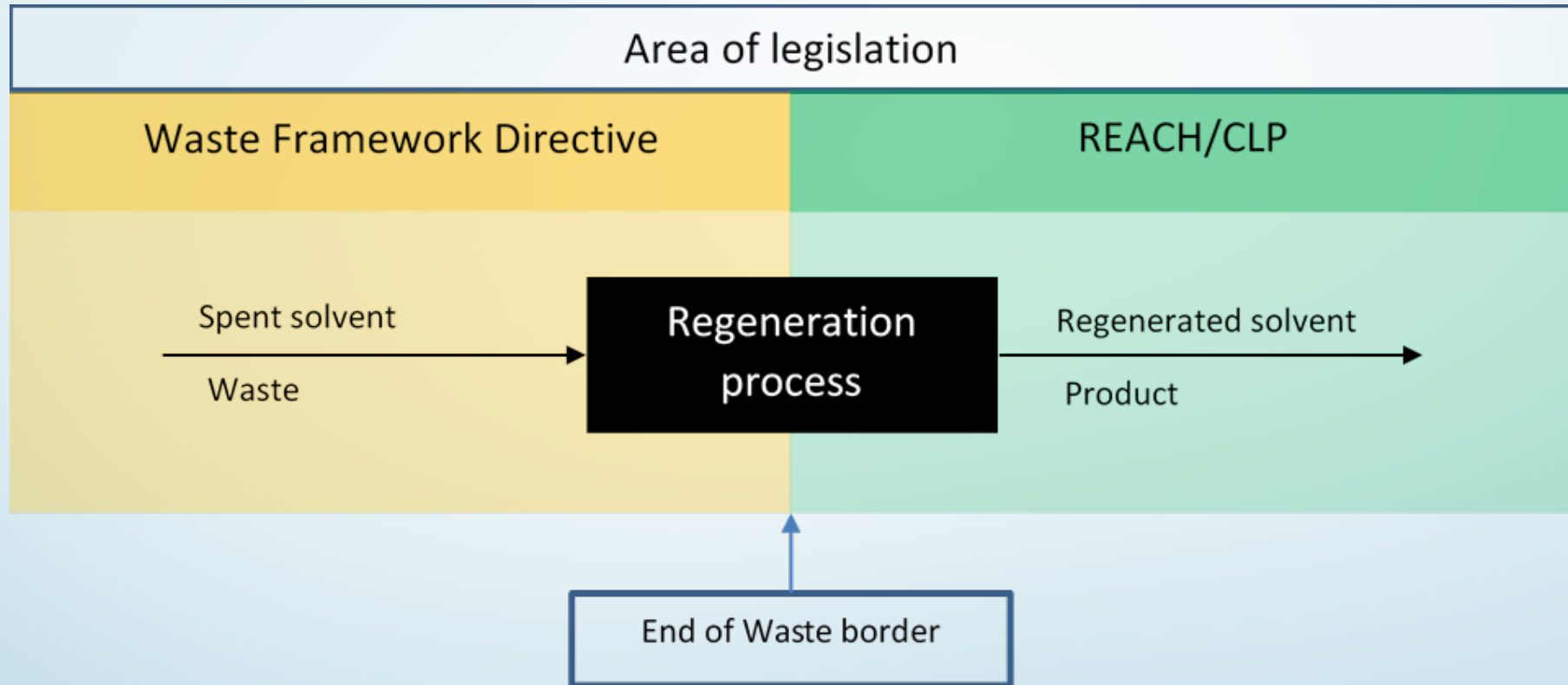
# Methanol recovery project

*In collaboration with Corden Pharma Bergamo S.p.A.*

## Results:

- 90% of methanol recovered
- 99,4% methanol in recovered solvent
- -1832 ton/year of CO<sub>2</sub> emissions

# Regulatory aspects



Critical factor: definition of a stable and European End of Waste border

*Solvent Cyclization*  
*by Emanuele Marcone*

Thank you for your  
attention